

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

SATO et al.

Group Art Unit: Unknown

Application No.: New U.S. Patent Application

Examiner: Unknown

Filed: November 30, 2001

Attorney Dkt. No.: 108384-00034

For: RESIN COMPOUND FOR FABRICATING INTERLAYER DIELECTRIC OF
PRINTED WIRING BOARD, RESIN SHEET AND RESIN APPLIED-COPPER FOIL
FOR FORMING INSULATION LAYER USING THE RESIN COMPOUND, AND
COPPER-CLAD LAMINATE USING THEM

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

November 30, 2001

Sir:

Prior to initial examination of the application, please amend the above-identified application as follows:

IN THE CLAIMS:

Please amend claims 4, 5, 6, 7, 9 and 10 as follows:

4. (Amended) The resin compound used for fabricating the interlayer dielectric of the printed wiring board as set forth in Claim 2, wherein the polymers having crosslinkable functional groups within a molecule are any one or more of polyether sulfone resin having a hydroxyl group at a terminal, polyvinyl acetal resin having repeated hydroxyl groups within a molecule, and phenoxy resin.

5. (Amended) The resin compound used for fabricating the interlayer dielectric of the printed wiring board as set forth in Claim 2, wherein the phenol novolak epoxy resin curing agent containing triazine rings within a molecule comprises one or two of melamine and benzoguanamine and a compound obtained from a condensation reaction with phenols and formaldehydes and has 5 to 25% by weight of nitrogen content.

6. (Amended) The resin compound used for fabricating the interlayer dielectric of the printed wiring board as set forth in Claim 2, wherein the maleimide compounds having thermosetting properties are any one or more of N,N'-(4,4-diphenylmethane)bismaleimide, bis(3-ethyl-5-methyl-4-maleimidephenyl)methane, 2,2-bis[4-(4-maleimidephenoxy)phenyl]propane, and thermosetting maleimide compounds obtained from Michael addition reaction of these maleimide compounds and polyamines.

7. (Amended) A method for producing the resin compound used for fabricating the interlayer dielectric of the printed wiring board as set forth in Claim 1, wherein a composition is made to have 20 to 70 parts by weight of epoxy resins, 5 to 30 parts by weight of polymers having crosslinkable functional groups within a molecule, 10 to 50 parts by weight of maleimide compounds having thermosetting properties, and a balance being a crosslinker added as necessary and a phenol novolak epoxy resin curing agent containing triazine rings within a molecule given that a total amount of the resin compound excluding a solvent is 100 parts by weight, and that a solids content

after the composition is added to and dissolved in the solvent becomes 40 to 50% by weight.

9. (Amended) A resin sheet for forming an insulating layer used for manufacturing a copper-clad laminate, wherein the resin compound for fabricating the interlayer dielectric of the printed wiring board as set forth in Claim 1 is made into a sheet which is in a semi-cured state.

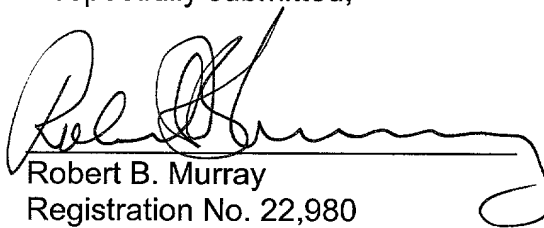
10. (Amended) A resin applied-copper foil constituted by forming a resin layer on a surface of copper foil employing the resin compound for fabricating the interlayer dielectric of the printed wiring board as set forth in Claim 1.

REMARKS

Claims 1-12 are pending in this application. By this Amendment, claims 4, 5, 6, 7, 9 and 10 are amended. No new matter is contained in the amendments.

Please charge any fee deficiency or credit any overpayment to Deposit Account No. 01-2300.

Respectfully submitted,



Robert B. Murray
Registration No. 22,980

Customer No. 004372
ARENT FOX KINTNER PLOTKIN & KAHN, PLLC
1050 Connecticut Avenue, N.W.,
Suite 400
Washington, D.C. 20036-5339
Tel: (202) 857-6000
Fax: (202) 638-4810

100EFT 200306060

MARKED UP CLAIMS

4. The resin compound used for fabricating the interlayer dielectric of the printed wiring board as set forth in Claim[s] 2 [or 3], wherein the polymers having crosslinkable functional groups within a molecule are any one or more of polyether sulfone resin having a hydroxyl group at a terminal, polyvinyl acetal resin having repeated hydroxyl groups within a molecule, and phenoxy resin.

5. The resin compound used for fabricating the interlayer dielectric of the printed wiring board as set forth in [any of] Claim[s] 2 [to 4], wherein the phenol novolak epoxy resin curing agent containing triazine rings within a molecule comprises one or two of melamine and benzoguanamine and a compound obtained from a condensation reaction with phenols and formaldehydes and has 5 to 25% by weight of nitrogen content.

6. The resin compound used for fabricating the interlayer dielectric of the printed wiring board as set forth in [any of] Claim[s] 2 [to 5], wherein the maleimide compounds having thermosetting properties are any one or more of N,N'-(4,4-diphenylmethane)bismaleimide, bis(3-ethyl-5-methyl-4-maleimidephenyl)methane, 2,2-bis[4-(4-maleimidephenoxy)phenyl]propane, and thermosetting maleimide compounds obtained from Michael addition reaction of these maleimide compounds and polyamines.

7. A method for producing the resin compound used for fabricating the interlayer dielectric of the printed wiring board as set forth in [any of] Claim[s] 1 [to 6], wherein a composition is made to have 20 to 70 parts by weight of epoxy resins, 5 to 30 parts by weight of polymers having crosslinkable functional groups within a molecule, 10 to 50 parts by weight of maleimide compounds having thermosetting properties, and a balance being a crosslinker added as necessary and a phenol novolak epoxy resin curing agent containing triazine rings within a molecule given that a total amount of the resin compound excluding a solvent is 100 parts by weight, and that a solids content after the composition is added to and dissolved in the solvent becomes 40 to 50% by weight.

8. The method for producing the resin compound used for fabricating the interlayer dielectric of the printed wiring board as set forth in Claim 7, wherein the solvent is a mixed solvent of N-methylpyrrolidone and methyl ethyl ketone, the mixing ratio of N-methylpyrrolidone/methyl ethyl ketone being in a range of 50/50 to 40/60 (by weight).

9. A resin sheet for forming an insulating layer used for manufacturing a copper-clad laminate, wherein the resin compound for fabricating the interlayer dielectric of the printed wiring board as set forth in Claim[s] 1 [to 6] is made into a sheet which is in a semi-cured state.

10. A resin applied-copper foil constituted by forming a resin layer on a surface of copper foil employing the resin compound for fabricating the interlayer dielectric of the printed wiring board as set forth in any of Claim[s] 1 [to 6].

11. The copper-clad laminate manufactured by the use of the resin sheet for forming the insulating layer as set forth in Claim 9.

12. The copper-clad laminate manufactured by the use of the resin applied-copper foil as set forth in Claim 10.